

**UNITED STATES PATENT APPLICATION**

**FOR**

**GAMING DEVICE HAVING A MULTIPLE SYMBOL SWAPPING GAME**

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## **SPECIFICATION**

### **TITLE**

**“GAMING DEVICE HAVING A MULTIPLE SYMBOL SWAPPING GAME”**

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### **BACKGROUND OF THE INVENTION**

The present invention relates in general to a gaming device, and more  
15 particularly, to a gaming device with multiple symbols in different display positions which swap with one another upon a triggering event in a game. Gaming device manufacturers provide gaming machines having a plurality of reels, each reel including a plurality of symbols. In a reel game, the player causes the reels to spin by placing a wager on the game. The reels spin and  
20 then stop to display a generated combination of symbols on the reels. If a generated symbol or combination of symbols appears along an active payline associated with the reels or in a scatter pay, and the symbol or the combination of symbols corresponds to, or is associated with, an award, the player receives the award associated with the winning symbol or combination  
25 of symbols. It can be frustrating for a player to “almost win an award” when the symbols necessary for a winning combination appear together on the reels but are not in the proper configuration or order to produce a winning combination. One popular game feature which attempts to rectify the player’s frustration in such a situation and increase the player’s award opportunities is  
30 commonly referred to as a nudge feature or option. A nudge occurs after the

reels initially spin and stop allowing the game or the player to move the reels through a limited rotation from a first or non-winning to a second and possibly winning position (to effect a winning combination or align a winning combination on an active payline).

There is therefore a need for other ways of manipulating the position of symbols on the reels to create winning combinations on the reels. There is also a need for new and different games which employ reels.

The present invention provides a gaming device which performs a series of rearrangements of symbols and determines whether a winning combination of symbols exists after each rearrangement. In one embodiment, the gaming device includes multiple fixed positions, symbol display positions or defined areas on portions of the reels in which a plurality of symbols are displayed after the reels stop spinning or after an activation of the reels. In one embodiment, the reels include a plurality of swapping indicators associated with the plurality of the symbols on the reels.

In one embodiment, if a predetermined number of swapping indicators associated with a plurality of the generated symbols line up, match one another, are adjacent to one another or, alternatively, form a predetermined configuration on the display, a set of indicated symbols is identified, and the gaming device initiates a symbol swapping rearrangement limited to the set of indicated symbols. In one embodiment, the swapping indicators associated with symbols on adjacent reels must align with one another to initiate a rearrangement.

The symbol swapping rearrangement, in one embodiment, includes moving the symbols associated with the swapping indicators to a different fixed position and, in one embodiment, to the fixed positions of the other symbols which are swapped. In one embodiment, a plurality of symbols above or below or beside one another exchange positions with one another. A symbol can traverse or cross over to another payline or another reel, or another position on the same reel. A symbol is thus able to move from one position on the reel to another position on the same reel. Alternatively, or in addition, a symbol is able to move to an adjacent or different reel. In one embodiment, the rearrangement includes rotating the indicated symbols in a counter-clockwise fashion on the reels. Alternatively, the symbols can rotate in a clockwise direction. It should be appreciated that any suitable movement of a symbol in the indicated set to any fixed position or position previously occupied by one of the other symbols in the set is contemplated by the present invention.

In one embodiment of the present invention, a predetermined configuration of swapping indicators associated with four symbols triggers a rearrangement of those symbols on the reels. Two of the four symbols appear together on a first reel and are adjacent to the other two symbols which appear together on a second reel. Upon the initiation of a rearrangement, the four symbols, in one embodiment, each rotate in a clockwise or counterclockwise fashion. One symbol moves down the reel into the position of a second symbol; the second symbol moves to the adjacent reel to the position of a third symbol; the third symbol moves in an

upward direction to replace the fourth symbol on the same reel; and the fourth symbol moves to the position of the first symbol. It should be appreciated that the rearrangement of the symbols can vary in direction, sequence, and in the number of positions moved.

5           In one embodiment, after each symbol swapping rearrangement, the gaming device determines if a winning combination has occurred on the reels such as along one or more paylines as a result of the rearrangement. In one embodiment, the player receives any award or outcome associated with a winning combination comprising the rearranged symbols. In one  
10       embodiment, the gaming device continues to rotate or rearrange the symbols and to reevaluate the existence of any other winning combinations. It should be appreciated that the rearrangement can occur a plurality of times, and the player, in one embodiment, may receive the awards associated with each of the winning combinations generated by the rearrangement of the symbols.  
15       Alternatively, the gaming device rearranges the symbols until a winning combination of symbols is generated.

          In one embodiment, the indicated symbols continue to undergo a symbol swapping rearrangement until all predetermined symbol combinations of the indicated symbols are generated or until, as in one embodiment, each  
20       of the indicated symbols are rearranged to their original positions. Alternatively, in an embodiment in which the symbol swapping indicators are associated with the symbols, the indicated symbols are rearranged only if a triggering configuration of the swapping indicators occurs with each rearrangement.

25           It should also be appreciated that multiple rearrangements or rotations can occur when more than one set of swapping indicators align to trigger a rearrangement or rotation as a result of the initial spin of the reels or any subsequent rearrangement of indicated symbols. In an embodiment in which the symbol swapping indicators are associated with each of the symbols,  
30       rearrangement of the indicated symbols may position the symbol swapping indicators in a configuration which indicates another set of symbols.

In one embodiment in which multiple sets of symbols are simultaneously indicated for rearrangement, the predetermined symbol combinations of the rearranged symbols of one set of indicated symbols are evaluated before the rearrangement of another set of indicated symbols occurs. In one embodiment, this evaluation occurs after each rearrangement of the indicated symbols in that set. Alternatively, an evaluation occurs after each set of indicated symbols undergoes at least one rearrangement. In a further alternative embodiment, an evaluation occurs between the rearrangement of the indicated symbols of one set and the rearrangement of the indicated symbols of another set in an alternating fashion. It should be appreciated that an evaluation of the rearranged indicated symbols for a winning combination of symbols can occur at any suitable time and with any suitable frequency as desired by the implementer of the gaming device.

It is therefore an advantage of the present invention to add a feature to a gaming device which provides increased excitement and enjoyment to the player.

A further advantage of the present invention to provide a gaming device which increases the chances of a player obtaining an award.

It is also an advantage of the present invention to selectively rearrange symbols to increase the likelihood of forming a winning combination of symbols.

It is an advantage of the present invention to provide a reel game that generates multiple combinations of symbols with each spin of the reels.

It is an advantage of the present invention to provide a reel game having symbols which can change reels to potentially form a winning combination.

Other objects, features and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheets of drawings, wherein like numerals refer to like parts elements, components, steps and processes.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a front perspective view of one embodiment of the gaming device of the present invention.

5 Fig. 1B is a front perspective view of another embodiment of the gaming device of the present invention.

Fig. 2A is a schematic block diagram of the electronic configuration of one embodiment of the gaming device of the present invention.

Fig. 2B is a schematic block diagram of a central determination embodiment of the gaming device of the present invention.

10 Fig. 3A, 3B, 3C, 3D and 3E are front perspective views of one embodiment of the present invention illustrating a rearrangement of one set of symbols.

Fig. 4A, 4B and 4C are front perspective views of one embodiment of the present invention illustrating a rearrangement of two sets of symbols.

15 Fig. 5A, 5B, 5C, 5D and 5E are front perspective views of one embodiment of the present invention illustrating a rearrangement of two overlapping sets of symbols.

20 Fig. 6A, 6B, 6C, 6D and 6E are front perspective views of one embodiment of the present invention illustrating a rearrangement of two overlapping sets of symbols.

## DETAILED DESCRIPTION OF THE INVENTION

### Gaming Device and Electronics

25 Referring now to the drawings, two alternative embodiments of the gaming device of the present invention are illustrated in Figs. 1A and 1B as gaming device 10a and gaming device 10b, respectively. Gaming device 10a and/or gaming device 10b are generally referred to herein as gaming device 10.

30 In one embodiment, as illustrated in Figs. 1A and 1B, gaming device 10 has a support structure, housing or cabinet which provides support for a

plurality of displays, inputs, controls and other features of a conventional gaming machine. It is configured so that a player can operate it while standing or sitting. The gaming device may be positioned on a base or stand or can be configured as a pub-style table-top game (not shown) which a player can operate preferably while sitting. As illustrated by the different configurations shown in Figs. 1A and 1B, the gaming device can be constructed with varying cabinet and display configurations.

In one embodiment, as illustrated in Fig. 2A, the gaming device preferably includes at least one processor 12, such as a microprocessor, a microcontroller-based platform, a suitable integrated circuit or one or more application-specific integrated circuits (ASIC's). The processor is in communication with or operable to access or to exchange signals with at least one data storage or memory device 14. In one embodiment, the processor and the memory device reside within the cabinet of the gaming device. The memory device stores program code and instructions, executable by the processor, to control the gaming device. The memory device also stores other data such as image data, event data, player input data, random or pseudo-random number generators, pay-table data or information and applicable game rules that relate to the play of the gaming device. In one embodiment, the memory device includes random access memory (RAM). In one embodiment, the memory device includes read only memory (ROM). In one embodiment, the memory device includes flash memory and/or EEPROM (electrically erasable programmable read only memory). Any other suitable magnetic, optical and/or semiconductor memory may be implemented in conjunction with the gaming device of the present invention.

In one embodiment, part or all of the program code and/or operating data described above can be stored in a detachable or removable memory device, including, but not limited to, a suitable cartridge, disk or CD ROM. A player can use such a removable memory device in a desktop, a laptop personal computer, a personal digital assistant (PDA) or other computerized



platform. The processor and memory device may be collectively referred to herein as a "computer" or "controller."

In one embodiment, as discussed in more detail below, the gaming device randomly generates awards and/or other game outcomes based on probability data. That is, each award or other game outcome is associated with a probability and the gaming device generates the award or other game outcome to be provided to the player based on the associated probabilities. In this embodiment, since the gaming device generates outcomes randomly or based upon a probability calculation, there is no certainty that the gaming device will ever provide the player with any specific award or other game outcome.

In another embodiment, as discussed in more detail below, the gaming device employs a predetermined or finite set or pool of awards or other game outcomes. In this embodiment, as each award or other game outcome is provided to the player, the gaming device removes the provided award or other game outcome from the predetermined set or pool. Once removed from the set or pool, the specific provided award or other game outcome cannot be provided to the player again. This type of gaming device provides players with all of the available awards or other game outcomes over the course of the play cycle and guarantees the amount of actual wins and losses.

In one embodiment, as illustrated in Fig. 2A, the gaming device includes one or more display devices controlled by the processor. The display devices are preferably connected to or mounted to the cabinet of the gaming device. The embodiment shown in Fig. 1A includes a central display device 16 which displays a primary game. This display device may also display any secondary game associated with the primary game as well as information relating to the primary or secondary game. The alternative embodiment shown in Fig. 1B includes a central display device 16 and an upper display device 18. The upper display device may display the primary game, any suitable secondary game associated with the primary game and/or information relating to the primary or secondary game. As seen in

Figs. 1A and 1B, in one embodiment, gaming device includes a credit display 20 which displays a player's current number of credits, cash, account balance or the equivalent. In one embodiment, gaming device includes a bet display 22 which displays a player's amount wagered.

5           The display devices may include, without limitation, a monitor, a television display, a plasma display, a liquid crystal display (LCD) a display based on light emitting diodes (LED) or any other suitable electronic device or display mechanism. In one embodiment, as described in more detail below, the display device includes a touch-screen with an associated touch-  
10       screen controller. The display devices may be of any suitable configuration, such as a square, rectangle, elongated rectangle.

          The display devices of the gaming device are configured to display at least one and preferably a plurality of game or other suitable images, symbols and indicia such as any visual representation or exhibition of the  
15       movement of objects such as mechanical, virtual or video reels and wheels, dynamic lighting, video images, images of people, characters, places, things and faces of cards, tournament advertisements and the like.

          In one alternative embodiment, the symbols, images and indicia displayed on or of the display device may be in mechanical form. That is, the  
20       display device may include any electromechanical device, such as one or more mechanical objects, such as one or more rotatable wheels, reels or dice, configured to display at least one and preferably a plurality of game or other suitable images, symbols or indicia.

          As illustrated in Fig. 2A, in one embodiment, the gaming device  
25       includes at least one payment acceptor 24 in communication with the processor. As seen in Figs. 1A and 1B, the payment acceptor may include a coin slot 26 and a payment, note or bill acceptor 28, where the player inserts money, coins or tokens. The player can place coins in the coin slot or paper money, ticket or voucher into the payment, note or bill acceptor. In other  
30       embodiments, devices such as readers or validators for credit cards, debit cards or credit slips could be used for accepting payment. In one embodiment, a player may insert an identification card into a card reader of

the gaming device. In one embodiment, the identification card is a smart card having a programmed microchip or a magnetic strip coded with a player's identification, credit totals and other relevant information. In one embodiment, money may be transferred to a gaming device through  
5 electronic funds transfer. When a player funds the gaming device, the processor determines the amount of funds entered and the corresponding amount is shown on the credit or other suitable display as described above.

As seen in Figs. 1A, 1B and 2A, in one embodiment the gaming device includes at least one and preferably a plurality of input devices 30 in  
10 communication with the processor. The input devices can include any suitable device which enables the player to produce an input signal which is read by the processor. In one embodiment, after appropriate funding of the gaming device, the input device is a game activation device, such as a pull arm 32 or a play button 34 which is used by the player to start any primary  
15 game or sequence of events in the gaming device. The play button can be any suitable play activator such as a bet one button, a max bet button or a repeat the bet button. In one embodiment, upon appropriate funding, the gaming device begins the game play automatically. In another embodiment, upon the player engaging one of the play buttons, the gaming device  
20 automatically activates game play.

In one embodiment, as shown in Figs. 1A and 1B, one input device is a bet one button 36. The player places a bet by pushing the bet one button. The player can increase the bet by one credit each time the player pushes the bet one button. When the player pushes the bet one button, the number  
25 of credits shown in the credit display preferably decreases by one, and the number of credits shown in the bet display preferably increases by one. In another embodiment, one input device is a bet max button (not shown) which enables the player to bet the maximum wager permitted for a game of the gaming device.

30 In one embodiment, one input device is a cash out button 26. The player may push the cash out button and cash out to receive a cash payment or other suitable form of payment corresponding to the number of remaining

credits. In one embodiment, when the player cashes out, the player receives the coins or tokens in a coin payout tray 40. In one embodiment, when the player cashes out, the player may receive other payout mechanisms such as tickets or credit slips redeemable by a cashier or funding to the player's electronically recordable identification card.

In one embodiment, as mentioned above and seen in Fig. 2A, one input device is a touch-screen 42 coupled with a touch-screen controller 44, or some other touch-sensitive display overlay to allow for player interaction with the images on the display. The touch-screen and the touch-screen controller are connected to a video controller 46. A player can make decisions and input signals into the gaming device by touching touch-screen at the appropriate places.

The gaming device may further include a plurality of communication ports for enabling communication of the processor with external peripherals, such as external video sources, expansion buses, game or other displays, an SCSI port or a key pad.

In one embodiment, as seen in Fig. 2A, the gaming device includes a sound generating device controlled by one or more sounds cards 48 which function in conjunction with the processor. In one embodiment, the sound generating device includes at least one and preferably a plurality of speakers 50 or other sound generating hardware and/or software for generating sounds, such as playing music for the primary and/or secondary game or for other modes of the gaming device, such as an attract mode. In one embodiment, the gaming device provides dynamic sounds coupled with attractive multimedia images displayed on one or more of the display devices to provide an audio-visual representation or to otherwise display full-motion video with sound to attract players to the gaming device. During idle periods, the gaming device may display a sequence of audio and/or visual attraction messages to attract potential players to the gaming device. The videos may also be customized for or to provide any appropriate information.

In one embodiment, the gaming machine may include a player or other sensor, such as a camera in communication with the processor (and possibly

controlled by the processor) that is selectively positioned to acquire an image of a player actively using the gaming device and/or the surrounding area of the gaming device. In one embodiment, the camera may be configured to selectively acquire still or moving (e.g., video) images and may be configured  
5 to acquire the images in either an analog, digital or other suitable format. The display devices may be configured to display the image acquired by the camera as well as display the visible manifestation of the game in split screen or picture-in-picture fashion. For example, the camera may acquire an image of the player and that image can be incorporated into the primary and/or  
10 secondary game as a game image, symbol or indicia.

Gaming device 10 can incorporate any suitable wagering primary or base game. The gaming machine or device of the present invention may include some or all of the features of conventional gaming machines or devices. It should be appreciated that, if the present invention is the a base  
15 or primary game or is incorporated into the base or primary game, the bonus or secondary game may comprise any suitable reel-type game, card game, number game or other game of chance susceptible to representation in an electronic or electromechanical form which produces a random outcome based on probability data upon activation from a wager. Alternatively, the  
20 base or primary game may comprise any suitable reel-type game, card game, number game or other game of chance and the present invention is the bonus or secondary or is incorporated into the bonus or secondary game. That is, different primary wagering games, such as video poker games, video blackjack games, video keno, video bingo or any other suitable base or  
25 primary game may be played in combination with the present invention.

In one embodiment, as illustrated in Figs. 1A and 1B, a base or primary game or a bonus or secondary game may be a slot game with one or more paylines 52. The paylines may be horizontal, vertical, circular, diagonal, angled or any combination thereof. In this embodiment, the  
30 gaming device displays at least one and preferably a plurality of reels 34, such as three to five reels 34 in either electromechanical form with mechanical rotating reels or video form with simulated reels and movement

thereof. In one embodiment, an electromechanical slot machine includes a plurality of adjacent, rotatable wheels which may be combined and operably coupled with an electronic display of any suitable type. In another embodiment, if the reels 34 are in video form, the plurality of simulated video  
5 reels 34 are displayed on one or more of the display devices as described above. Each reel 34 displays a plurality of indicia such as bells, hearts, fruits, numbers, letters, bars or other images which preferably correspond to a theme associated with the gaming device. In this embodiment, the gaming device awards prizes when the reels of the primary game stop spinning if  
10 specified types and/or configurations of indicia or symbols occur on an active pay line or otherwise occur in a winning pattern.

In one embodiment, a base or primary game or a bonus or secondary game may be a poker game wherein the gaming device enables the player to play a conventional game of video poker and initially deals five cards all face  
15 up from a virtual deck of fifty-two card deck. Cards may be dealt as in a traditional game of cards or in the case of the gaming device, may also include that the cards are randomly selected from a predetermined number of cards. If the player wishes to draw, the player selects the cards to hold via one or more input device, such as pressing related hold buttons or via the  
20 touch screen. The player then presses the deal button and the unwanted or discarded cards are removed from the display and replacement cards are dealt from the remaining cards in the deck. This results in a final five-card hand. The final five-card hand is compared to a payout table which utilizes conventional poker hand rankings to determine the winning hands. The  
25 player is provided with an award based on a winning hand and the credits the player wagered.

In another embodiment, a base or primary game or a bonus or secondary game may be a multi-hand version of video poker. In this embodiment, the player is dealt at least two hands of cards. In one such  
30 embodiment, the cards are the same cards. In one embodiment each hand of cards is associated with its own deck of cards. The player chooses the cards to hold in a primary hand. The held cards in the primary hand are also

held in the other hands of cards. The remaining non-held cards are removed from each hand displayed and for each hand replacement cards are randomly dealt into that hand. Since the replacement cards are randomly dealt independently for each hand, the replacement cards for each hand will usually be different. The poker hand rankings are then determined hand by hand and awards are provided to the player.

In one embodiment, a base or primary game or a bonus or secondary game may be a keno game wherein the gaming device displays a plurality of selectable indicia or numbers on at least one of the display devices. In this embodiment, the player selects at least one and preferable a plurality of the selectable indicia or numbers via an input device or via the touch screen. The gaming device then displays a series of drawn numbers to determine an amount of matches, if any, between the player's selected numbers and the gaming device's drawn numbers. The player is provided an award based on the amount of matches, if any, based on the amount of determined matches.

In one embodiment, in addition to winning credits in a base or primary game, the gaming device may also give players the opportunity to win credits in a bonus or secondary game or bonus or secondary round. The bonus or secondary game enables the player to obtain a prize or payout in addition to the prize or payout, if any, obtained from the base or primary game. In general, a bonus or secondary game produces a significantly higher level of player excitement than the base or primary game because it provides a greater expectation of winning than the base or primary game and is accompanied with more attractive or unusual features than the base or primary game.

In one embodiment, the bonus or secondary game may be any type of suitable game, either similar to or completely different from the base or primary game. In one embodiment, the gaming device includes a program which will automatically begin a bonus round when the player has achieved a triggering event or qualifying condition in the base or primary game. In one embodiment, the triggering event or qualifying condition may be a selected outcome in the primary game or a particular arrangement of one or more

indicia on a display device in the primary game, such as the number seven appearing on three adjacent reels along a payline in the primary slot game embodiment seen in Figs. 1A and 1B. In another embodiment, the triggering event or qualifying condition may be by exceeding a certain amount of game play (number of games, number of credits, amount of time), reaching a specified number of points earned during game play or as a random award.

In one embodiment, once a player has qualified for a bonus game, the player may subsequently enhance his/her bonus game participation through continued play on the base or primary game. Thus, for each bonus qualifying event, such as a bonus symbol, that the player obtains, a given number of bonus game wagering points or credits may be accumulated in a "bonus meter" programmed to accrue the bonus wagering credits or entries toward eventual participation in a bonus game. The occurrence of multiple such bonus qualifying events in the primary game may result in an arithmetic or geometric increase in the number of bonus wagering credits awarded. In one embodiment, extra bonus wagering credits may be redeemed during the bonus game to extend play of the bonus game.

In one embodiment, no separate entry fee or buy in for a bonus game need be employed. That is, a player may not purchase an entry into a bonus game; he must win or earn entry through play of the primary game and, thus, play of the primary game is encouraged. In another embodiment, qualification of the bonus or secondary game could be accomplished through a simple "buy in" by the player if, for example, the player has been unsuccessful at qualifying through other specified activities.

In one embodiment, as illustrated in Fig. 2B, one or more of the gaming devices 10 of the present invention may be connected to each other through a data network or a remote communication link 58 with some or all of the functions of each gaming device provided at a central location such as a central server or central controller 56. More specifically, the processor of each gaming device may be designed to facilitate transmission of signals between the individual gaming device and the central server or controller.



In one embodiment, the game outcome provided to the player is determined by a central server or controller and provided to the player at the gaming device of the present invention. In this embodiment, each of a plurality of such gaming devices are in communication with the central server or controller. Upon a player initiating game play at one of the gaming devices, the initiated gaming device communicates a game outcome request to the central server or controller.

In one embodiment, the central server or controller receives the game outcome request and randomly generates a game outcome for the primary game based on probability data. In another embodiment, the central server or controller randomly generates a game outcome for the secondary game based on probability data. In another embodiment, the central server or controller randomly generates a game outcome for both the primary game and the secondary game based on probability data. In this embodiment, the central server or controller is capable of storing and utilizing program code or other data similar to the processor and memory device of the gaming device.

In an alternative embodiment, the central server or controller maintains one or more predetermined pools or sets of predetermined game outcomes. In this embodiment, the central server or controller receives the game outcome request and independently selects a predetermined game outcome from a set or pool of game outcomes. The central server or controller flags or marks the selected game outcome as used. Once a game outcome is flagged as used, it is prevented from further selection from the set or pool and cannot be selected by the central controller or server upon another wager. The provided game outcome can include a primary game outcome, a secondary game outcome, primary and secondary game outcomes, or a series of game outcomes such a free games.

The central server or controller communicates the generated or selected game outcome to the initiated gaming device. The gaming device receives the generated or selected game outcome and provides the game outcome to the player. In an alternative embodiment, how the generated or selected game outcome is to be presented or displayed to the player, such as

a reel symbol combination of a slot machine or a hand of cards dealt in a card game, is also determined by the central server or controller and communicated to the initiated gaming device to be presented or displayed to the player. Central production or control can assist a gaming establishment  
5 or other entity in maintaining appropriate records, controlling gaming, reducing and preventing cheating or electronic or other errors, reducing or eliminating win-loss volatility and the like.

In another embodiment, one or more of the gaming devices of the present invention are in communication with a central server or controller for  
10 monitoring purposes only. That is, each individual gaming device randomly generates the game outcomes to be provided to the player and the central server or controller monitors the activities and events occurring on the plurality of gaming devices. In one embodiment, the gaming network includes a real-time or on-line accounting and gaming information system  
15 operably coupled to the central server or controller. The accounting and gaming information system of this embodiment includes a player database for storing player profiles, a player tracking module for tracking players and a credit system for providing automated casino transactions.

A plurality of the gaming devices of the present invention are capable  
20 of being connected together through a data network. In one embodiment, the data network is a local area network (LAN), in which one or more of the gaming devices are substantially proximate to each other and an on-site central server or controller as in, for example, a gaming establishment or a portion of a gaming establishment. In another embodiment, the data network  
25 is a wide area network (WAN) in which one or more of the gaming devices are in communication with at least one off-site central server or controller. In this embodiment, the plurality of gaming devices may be located in a different part of the gaming establishment or within a different gaming establishment than the off-site central server or controller. Thus, the WAN may include an  
30 off-site central server or controller and an off-site gaming device located within gaming establishments in the same geographic area, such as a city or state. The WAN gaming system of the present invention may be

substantially identical to the LAN gaming system described above, although the number of gaming devices in each system may vary relative to each other.

In another embodiment, the data network is an internet or intranet. In this embodiment, the operation of the gaming device can be viewed at the gaming device with at least one internet browser. In this embodiment, operation of the gaming device and accumulation of credits may be accomplished with only a connection to the central server or controller (the internet/intranet server) through a conventional phone or other data transmission line, digital signal line (DSL), T-1 line, coaxial cable, fiber optic cable, or other suitable connection. In this embodiment, players may access an Internet game page from any location where an internet connection and computer, or other internet facilitator are available. The expansion in the number of computers and number and speed of internet connections in recent years increases opportunities for players to play from an ever-increasing number of remote sites. It should be appreciated that enhanced bandwidth of digital wireless communications may render such technology suitable for some or all communications according to the present invention, particularly if such communications are encrypted. Higher data transmission speeds may be useful for enhancing the sophistication and response of the display and interaction with the player.

In another embodiment, a plurality of gaming devices at one or more gaming sites may be networked to a central server in a progressive configuration, as known in the art, wherein a portion of each wager to initiate a base or primary game may be allocated to bonus or secondary event awards. In one embodiment, a host site computer is coupled to a plurality of the central servers at a variety of mutually remote gaming sites for providing a multi-site linked progressive automated gaming system. In one embodiment, a host site computer may serve gaming devices distributed throughout a number of properties at different geographical locations including, for example, different locations within a city or different cities within a state.

In one embodiment, the host site computer is maintained for the overall operation and control of the system. In this embodiment, a host site computer oversees the entire progressive gaming system and is the master for computing all progressive jackpots. All participating gaming sites report to, and receive information from, the host site computer. Each central server computer is responsible for all data communication between the gaming device hardware and software and the host site computer.

### Symbol Swapping

Referring now to Figs. 3A to 3E, in one embodiment of the present invention, the gaming device displays a plurality of fixed positions on each of five reels 54a, 54b, 54c, 54d and 54e. The illustrated gaming device also has four paylines 52a, 52b, 52c and 52d associated with the reels. The illustrated gaming device also has a plurality of symbols 102 which, in this example, are represented by the letters A, B, C, D, E and F displayed on the reels. It should be appreciated that the symbols can include any suitable character, numeral, indicia or image. In one embodiment, a plurality of swapping indicators 104a, 104b, 104c and 104d are associated with a plurality of the symbols 102.

In one embodiment, the game begins by activating the reels areas. In the embodiment illustrated in Fig. 3A, the gaming device spins the reels to rearrange the symbols. In one embodiment, the symbols remain associated with their respective fixed positions through this first rearrangement. As in a conventional reel game, each reel spins independently of the other reels until each reel stops at a generated stop position to indicate a combination of symbols, if any, along the paylines. U.S. Patent No. 6,413,162 issued on July 2, 2002 and assigned to IGT discloses a different reel arrangement. It should be appreciated that the present invention can employ the reels disclosed in that patent.

In Fig. 3A, the swapping indicators 104a to 104d represented by four radial quadrants associated with each of four symbols 102a to 102d, respectively generated along paylines 52b and 52c on two different reels,

have aligned or matched to form, in the illustrated embodiment, a plurality of concentric circles. It should be appreciated that each of the swapping indicators can be any suitable shape, size, degree of illumination, or any suitable indicia to combine with other swapping indicators to form any  
5 suitable configuration, pattern or arrangement to indicate a set of symbols to be swapped or rearranged. In one embodiment, as illustrated in Fig. 3A, the matching or alignment of the swapping indicators triggers the rearrangement of the set of four indicated symbols. In Fig. 3A, the set of indicated symbols to be rearranged includes the D symbol 102a in position or fixed position  
10 100a, the B symbol 102b in fixed position 100b, the B symbol 102c in fixed position 100c, and the D symbol 102d in fixed position 100d. Although the swapping indicators of the two B symbols on reel 54c and the two B symbols on reel 54e match one another, the gaming device, in the illustrated embodiment, does not recognize the alignment of less than four swapping  
15 indicators to trigger the rearrangement of the symbols. It should be appreciated, however, that any suitable number of swapping indicators can trigger the rearrangement of at least three indicated symbols to each swap or move to at least one other locations in one embodiment.

In Figs. 3A and 3B, after the first evaluation for winning combinations,  
20 the D symbol 102a in fixed position 100a moves to fixed position 100b. The B symbol 102b in fixed position 100b moves to the fixed position 100c on the adjacent reel 54c. The B symbol 102c in fixed position 100c of reel 54c moves to the fixed position 100d on reel 54c. The D symbol 102d in fixed position 100d on reel 54c moves to the fixed position 100a on the adjacent  
25 reel 54b. It should be appreciated that the symbols, in one embodiment, move in a counter-clockwise rotation within the four fixed positions 100a to 100d on the two reels 54b and 54c. Alternatively, it should be appreciated that the symbols can rotate in a clockwise direction within the four positions on the two reels, or the symbols can move in any other random or  
30 predetermined direction, sequence or configuration sequentially or randomly.

Once a rearrangement or rotation of the set of indicated symbols occurs, the gaming device re-evaluates the symbols indicated on each of the

active paylines to determine if a winning combination associated with an award exists on the display. In Fig. 3B, the same symbol, B is generated along the same payline 52b on all the reels, except for the D symbol 102d on reel 54b.

5           In Figs. 3B and 3C, the D symbol 102d in fixed position 100a moves to fixed position 100b. The D symbol 102a in fixed position 100b moves to the fixed position 100c on the adjacent reel 54c. The B symbol 102b in fixed position 100c of reel 54c moves to the fixed position 100d on reel 54c. The B symbol 102c in fixed position 100d on reel 54c moves to the fixed position  
10   100a on the adjacent reel 54b. As performed after the first rearrangement illustrated in Fig. 3B, the gaming device reevaluates the active paylines to determine if a winning combination is associated with an award in the game. As a result of the rearrangement of the set of indicated symbols in the embodiment illustrated in Fig. 3C, a combination of five of the same "B"  
15   symbols on payline 52b is associated with an award in the game, and the gaming device provides the player the award. It should be appreciated that any suitable award or outcome can be associated with a predetermined winning combination of symbols on the reels as discussed above.

          In one embodiment, the gaming device continues to perform  
20   rearrangements of the set of indicated symbols even after a winning combination has occurred on the reels. In one embodiment the rearrangement of the set of indicated symbols continues until the indicated symbols are returned to the original fixed positions the symbols occupied after the initial spinning of the reels. Alternatively, the symbols are  
25   rearranged less than the number of times required to return each of the symbols to their original fixed positions. In Figs. 3C and 3D, the B symbol 102c in fixed position 100a moves to fixed position 100b on reel 54b. The D symbol 102d in fixed position 100b moves to fixed position 100c on the adjacent reel 54c. D symbol 102a in fixed position 100c moves to fixed  
30   position 100d on reel 54c. The B symbol 102b in fixed position 100d moves to fixed position 100a on the adjacent reel 54b to complete the rearrangement sequence. The gaming device reevaluates the active

paylines to determine if a winning combination exists. Payline 52b includes all B symbols except for a D symbol on reel 54c which is not a winning combination of symbols.

5 In one embodiment, the rearrangement continues to occur. In Figs. 3D and 3E, the B symbol 102b in fixed position 100a moves to fixed position 100b on reel 54b. The B symbol 102c in fixed position 100b moves to fixed position 100c on the adjacent reel 54c. The D symbol 102d in fixed position 100c moves to fixed position 100d on reel 54c. The D symbol 102a in fixed position 100d moves to fixed position 100a on the adjacent reel 54b. Upon  
10 completion of this rearrangement cycle, it should be appreciated that an entire rotation has occurred on the reels, and the symbols 102a to 102d have returned to their original fixed positions 100a to 100d, respectively. The gaming device, in one embodiment, reevaluates the possible winning combinations of symbols after each indicated symbol has been moved to  
15 each of the fixed positions associated with the indicated symbols. It should be appreciated that any additional rotation in either direction or any rearrangement of the symbols would yield the same results as produced in the previous three rearrangements or rotations.

Referring now to Figs. 4A to 4C, in one embodiment of the present  
20 invention the gaming device generates more than one set of indicated symbols on the reels. In Fig. 4A, the indicators of two sets 110a and 110b of four symbols each are aligned on the reels to trigger a symbol rearrangement or rotation within each of the four fixed positions associated with the indicated symbols on the reels. Again, other symbol indicators have aligned such as  
25 the C symbols on paylines 52c and 52d on reels 54c and 54d, respectively. However, the indicator for symbol A is not in alignment with the other symbol indicators as required by the illustrated embodiment. In one embodiment, the rearrangement or rotation of the indicated symbols on the reels occurs simultaneously, changing up to four of the five symbols on a single payline  
30 between each re-evaluation of the paylines by the gaming device to determine if a winning combination exists. Alternatively, one set of indicated symbols rotates, and the gaming device determines if any winning symbol

combinations exist before the rearrangement of another set of indicated symbols. It should be appreciated that this embodiment of rearranging one set of indicated symbols before reevaluating symbol combinations provides more potential winning combinations and is more desirable to the player. In Figs. 4A to 4B, the indicated symbols 102a to 102d of the first set 110a are rearranged. The F symbol 102a in fixed position 100a moves to fixed position 100b on reel 54a. The B symbol 102b in fixed position 100b on reel 54a moves to fixed position 100c on the adjacent reel 54b. The B symbol 102c in fixed position 100c on reel 54b moves to fixed position 100d on reel 54b. The F symbol 102d in fixed position 100d on reel 54b moves to fixed position 100a on the adjacent reel 54a. As discussed above, in one embodiment, the gaming device performs an evaluation of the active paylines before rearranging the second set of indicated symbols.

In similar fashion, the second set of 110b of indicated symbols 102e to 102h are rearranged. The F symbol 102e in fixed position 100e on reel 54d moves to fixed position 100f on reel 54d. The F symbol 102f in fixed position 100f on reel 54d moves to fixed position 100g on the adjacent reel 54e. The B symbol 102g in fixed position 100g on reel 54e moves to fixed position 100h on reel 54e. The B symbol 102h in fixed position 100h on reel 54e moves to fixed position 100e on the adjacent reel 54d. The gaming device then re-evaluates the paylines for additional winning combinations associated with a predetermined award or outcome in the game. In one embodiment illustrated in Fig. 4B, because the F symbol 102d appearing on payline 52a on reel 54a is different than the remaining B symbols on payline 52a, there is no winning combination. Similarly, five of the same symbols are not generated along payline 52b of the reels. In one embodiment, the rotation or rearrangement occurs again, and an additional re-evaluation occurs after the rearrangement.

In Figs. 4B and 4C, the first set of indicated symbols 110a on reels 54a and 54b undergo an additional rearrangement or rotation. In one embodiment, the rearrangement of the symbols continues in an alternating fashion regardless of the favorable outcome which would result from



discontinuing the rearrangement of one of the sets of indicated symbols. In an alternative embodiment, the gaming device or, alternatively, the player can make a determination whether a rotation of symbols occurs. In Fig. 4C, for example, the second set of indicated symbols 110b includes B symbols 102h and 102g generated along payline 52a on reels 54d and 54e, respectively, and the second set of indicated symbols 110b includes F symbols 102e and 102f on payline 52b on reels 54d and 54e, respectively, in positions which are potentially favorable to the player. All but one symbol on each of the paylines 52a and 52b are a winning combination. An additional rearrangement or rotation of the first set of indicated symbols 110a on reels 54a and 54b, however, provides winning combinations on paylines 52a and 52b as illustrated in Fig. 4C. In one embodiment, the gaming device provides the player at least one award or outcome for the two winning combinations.

In Figs. 5A to 5E, in one embodiment of the present invention, the gaming device generates overlapping sets of indicated symbols on three different reels, as illustrated in Fig. 5A. In one embodiment, the first set of indicated symbols 110a on reels 54a and 54b are the first set of indicated symbols to rearrange or rotate to new positions. The second set of indicated symbols on reels 54b and 54c subsequently or, alternatively, simultaneously, rearrange or rotate to new positions. In one embodiment, the gaming device re-evaluates the paylines between each alternating rotation of the symbols on each of the three reels. In a further embodiment, the gaming device alternates between rearranging and evaluating the indicated symbols on reels 54a and 54b until the symbols in one set are rearranged to their respective original fixed positions. Thereafter, the second set of indicated symbols on reels 54b and 54c proceed through a series of rotations and re-evaluations of the paylines until the symbols of that set return to their respective original fixed positions.

In Figs. 5A and 5B, the gaming device rearranges the first set of indicated symbols 110a. The A symbol 102a in fixed position 100a moves to fixed position 100b on reel 54a. The B symbol 102b in fixed position 100b moves to fixed position 100c on the adjacent reel 54b. The C symbol 102c in

fixed position 100c moves to fixed position 100d on reel 54b. The D symbol 102d in fixed position 100d moves to fixed position 100a on the adjacent reel 54a.

5 In one embodiment, the swapping indicators are associated with the symbols such that a rearrangement of the symbols of an indicated set of symbols may cause the swapping indicators associated with those symbols to align or trigger or indicate another set of symbols. In Fig. 5B, the first set of symbols 110a indicated on reels 54a and 54b have rearranged or rotated and have created an additional set of four indicated symbols 110c on  
10 paylines 52a and 52b on reels 54b and 54c. In one embodiment, the additional set of indicated symbols 110c enter a series of alternating or sequential rotations and re-evaluations of potential winning combinations on the paylines by the gaming device. In the illustrated embodiment in Fig. 5B, only the original indicated sets of symbols continue to be rearranged and re-  
15 evaluated for purposes of determining a winning combination on the paylines.

In Figs. 5B and 5C, the second indicated set of symbols rotate or rearrange to new positions on reels 54b and 54c to be evaluated by the gaming device for winning combinations. The C symbol 102c in fixed position 100d moves to fixed position 100c on reel 54b. It should be  
20 appreciated that the C symbol 102c moves back to its original position in fixed position 100c upon rearrangement of the second set of indicated symbols. In an alternative embodiment, the different sets of indicated symbols rotate in opposite directions or, otherwise, moves in a manner different from the rearrangement of the other set. The B symbol 102b in fixed  
25 position 100c moves to fixed position 100e on the adjacent reel 54c. It should be appreciated that the B symbol 102b has moved across two reels from reel 54a to 54c after two alternating rearrangements in the illustrated embodiment. It should also be appreciated that, in one embodiment such as one which includes at least two overlapping sets, a symbol is not limited to its  
30 original set of indicated symbols. In one embodiment, the symbols rotate within the combined fixed positions of at least two sets of indicated symbols. The final symbol movement for the rearrangement illustrated in Figs. 5B and

5C includes moving the B symbol 102e in fixed position 100e to fixed position 100f on reel 54c, and moving the B symbol 102f in fixed position 100f to fixed position 100d on the adjacent reel 54b.

5 In Fig. 5C, in one embodiment, the second set of symbols 110b proceeds through a rearrangement and re-evaluation before the first set of indicated symbols 110a proceeds through another rearrangement or rotation. In an alternative embodiment, each symbol in each set of indicated symbols is rearranged and evaluated through the predetermined symbol combinations of the indicated symbols before the rearrangement and symbol combination  
10 evaluation occurs for another set. In this embodiment, the gaming device illustrated in Fig. 5C, for example, completes the alternating rearrangement and re-evaluation series or sequence of the first set of symbols 110a before rearranging and re-evaluating the second set of indicated symbols 110b.

In Figs. 5C and 5D, the first set of indicated symbols, which now  
15 includes symbols from the second set of indicated symbols (the B symbol 102e), is rearranged. The D symbol 102d in fixed position 100a moves to fixed position 100b on reel 54a. The A symbol 102a in fixed position 100b moves to fixed position 100c on the adjacent reel 54b. The C symbol 102c in fixed position 100c moves to fixed position 100d on reel 54b. The B symbol  
20 102f in fixed position 100d moves to fixed position 100a on the adjacent reel 54a. In Fig. 5D, the first set of indicated symbols 110a are re-evaluated by the gaming device based on the new combination of symbols generated by the rearrangement or rotation. Again, no winning combination occurs on the reels.

25 In Figs. 5D and 5E, the gaming device alternates back to the second set of indicated symbols 110b to perform another rearrangement. The C symbol 102c in fixed position 100d moves to fixed position 100c on reel 54b. The A symbol 102a in fixed position 100c moves to fixed position 100e on the adjacent reel 54c. The B symbol 102b in fixed position 100e moves to fixed  
30 position 100f on reel 54c. The B symbol 102e in fixed position 100f moves to fixed position 100d on the adjacent reel 54b. In Fig. 5E, as a result of the second rotation or rearrangement of the second set of indicated symbols, a

winning combination occurs on payline 52b for which the player, in one embodiment, is provided an award or outcome. In one embodiment, the sequential or alternating rearrangement of the two indicated sets of symbols continues until the symbols in each set are rearranged to their original positions.

Referring now to Figs. 6A to 6D, in one embodiment, the order in which two sets of indicated symbols are rotated or rearranged determines whether a player achieves a winning combination on the paylines. Figs. 6A to 6D illustrate the same displayed symbols in the same fixed positions and the same order of symbols as originally generated in the illustrated display of Figs. 5A to 5E. In Fig. 6A to 6D, however, the second set of indicated symbols 110b on reels 54b and 54c are rotated or rearranged first instead of the first set of indicated symbols 110a on reels 54a and 54b. Again, in this embodiment, an evaluation of the symbol combinations is made after each alternating rotation or rearrangement of the set of indicated symbols. In Figs. 6A and 6B, the D symbol 102a in fixed position 100a on reel 54b moves to fixed position 100b on reel 54b. The C symbol 102b in fixed position 100b on reel 54b moves to fixed position 100c on reel 54c. The B symbol 102c in fixed position 100c on reel 54c moves to fixed position 100d on reel 54c. The B symbol 102d in fixed position 100d on reel 54c moves to fixed position 100a on the adjacent reel 54b. Upon a completed rearrangement of the symbols 102a to 102d, the gaming device evaluates the paylines on the reels for the winning symbol combinations.

Next, the gaming device rearranges the first set of indicated symbols 110a. In Figs. 6B and 6C, the A symbol 102e in fixed position 100e on reel 54a moves to fixed position 100f on reel 54a. The B symbol 102f in fixed position 100f on reel 54a moves to fixed position 100b on the adjacent reel 54b. The D symbol 102a in fixed position 100b on reel 54b moves to fixed position 100a on reel 54b. The B symbol in fixed position 100a on reel 54b moves to fixed position 100e on reel 54a. Again, the gaming device makes a determination of whether a winning combination of five symbols exists on the reels and, as illustrated in Fig. 6C, no paylines include a winning combination

of symbols. In one embodiment, the gaming device continues to rearrange the sets of indicated symbols in an alternating fashion. In Figs. 6C and 6D, the D symbol 102a in fixed position 100a on reel 54b moves to fixed position 100b on reel 54b. The B symbol 102f in fixed position 100b on reel 54b moves to fixed position 100c on the adjacent reel 54c. The C symbol 102b in fixed position 100c on reel 54c moves to fixed position 100d on reel 54c. The B symbol 102c in fixed position 100d on reel 54c moves to fixed position 100a on the adjacent reel 54b. In Fig. 6D, the gaming device makes another determination of whether a winning combination of five symbols on a payline exists, and, upon the completion of another rearrangement of the symbols, no winning combinations exist on any of the paylines. In Figs. 6D and 6E, the B symbol 102d in fixed position 100e on reel 54a moves to fixed position 100f on reel 54a. The A symbol 102e in fixed position 100f on reel 54a moves to fixed position 100b on the adjacent reel 54b. The D symbol 102a in fixed position 100b on reel 54b moves to fixed position 100a on reel 54b. The B symbol 102c in fixed position 100a on reel 54b moves to fixed position 100e on the adjacent reel 54a. In Fig. 6E, the gaming device once again makes a determination that no winning combination of five symbols occurs on a payline.

In comparison to the embodiment illustrated in Figs. 5A to 5E, at this point, after four alternating rearrangements of the indicated symbols of the two sets, the gaming device had generated a winning combination illustrated in Fig. 5E. It should, therefore, be appreciated that the order in which alternating rearrangements of two overlapping sets of indicated symbols are performed may result in different outcomes. In an embodiment where the rearrangement of the indicated symbols continues until the symbols return to their original fixed positions, as illustrated in Fig. 6A, and where no winning combination of symbols is produced on the paylines, the player will not receive an award on this spin of the reels.

In an alternative embodiment, the present invention is adapted to be played in games without reels. Instead of spinning the reels, each symbol display area or position on which a symbol is displayed is rearranged in

relation to the other symbol display positions to establish a first position of the symbol display positions. If swapping indicators associated with the symbols form a predetermined configuration, the indicated symbols are rearranged to different symbol display positions whereupon the gaming device re-evaluates

5 the combination of symbols.

It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without  
10 diminishing its intended advantages. It is therefore intended that such changes and modifications be covered by the appended claims.